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[54] **OPTICAL RECORDING MEDIUM HAVING THE PHYSICAL ADDRESS OF SECTORS MONOTONICALLY CHANGE ALONG SPIRAL TRACKS**

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[52] **U.S. Cl.** 369/275.3

[58] **Field of Search** 369/275.3, 275.4, 369/275.2, 58, 32, 44.26, 54; 428/64.4, 64.1; 430/320, 321

[56] References Cited**U.S. PATENT DOCUMENTS**

5,323,380	6/1994	Oda et al. .	
5,452,284	9/1995	Miyagawa et al. .	
5,508,995	4/1996	Moriya et al. .	
5,683,354	11/1997	Nakayama et al. .	
5,724,338	3/1998	Birukawa et al. .	
5,754,506	5/1998	Nagasawa et al. .	
5,848,050	12/1998	Nagasawa et al. .	
5,859,820	1/1999	Nagasawa et al. .	
5,867,474	2/1999	Nagasawa et al. .	
5,889,757	3/1999	Mori et al. .	
5,892,740	4/1999	Nagasawa et al.	369/44.26
5,933,410	8/1999	Nakane et al.	369/275.3
5,936,933	8/1999	Miyamoto et al.	369/275.3

5,946,285	8/1999	Nakane et al.	369/275.3
5,982,738	11/1999	Miyamoto et al.	369/275.3
6,055,218	4/2000	Takeda et al.	369/44.28
6,058,099	5/2000	Senshu	369/275.3
6,064,643	5/2000	Tanoue et al.	369/275.3
6,069,869	5/2000	Nagasawa et al.	369/275.3

FOREIGN PATENT DOCUMENTS

740 291 A2	10/1996	European Pat. Off. .
0 757 343	2/1997	European Pat. Off. .
64-596632	3/1989	Japan .
4-38633	2/1992	Japan .
6-176404	6/1994	Japan .
6325368	11/1994	Japan .
7-29185	1/1995	Japan .
7-50014	2/1995	Japan .
7-110944	4/1995	Japan .
7-141701	6/1995	Japan .
8-22621	1/1996	Japan .
WO 9625736	8/1996	Japan .
9106579	4/1997	Japan .
2 307 589	5/1997	United Kingdom .
2 307 770	6/1997	United Kingdom .

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[57] ABSTRACT

An optical disk according to the present invention has data recording tracks of lands and grooves. Each of the data recording tracks has a length corresponding to a revolution of the disk and includes a plurality of track sectors. The data recording tracks of lands and grooves are connected alternately to form a continuous data recording spiral. Each of the track sectors has a preformatted identification signal part for representing sector address data and has a data recording part for recording data. The identification signal part has a first address data region and a second address region. The first address data region and the second address data region are shifted by the same predetermined distance in opposite directions from the center of a groove track in the radial direction of the disk. The first address data region is set to represent the address of a groove track sector, and the second address data region is set to represent the address of a land track sector adjacent to the groove track sector.

6 Claims, 13 Drawing Sheets

